PATENT SPECIFICATION

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COMPLETE SPECIFICATION.

Improvements in or relating to Apparatus for giving Warning of the Approach of Trains.

I, ERNEST GUILLAUD, of rue du Transvaal 7, La Garenne Colombes (Seine), France, a French citizen, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to devices for observing or ascertaining from a distance the approach and approximate speed of trains or locomotives on railways, of the type utilising an electrical circuit comprising the two lines of rails carried by wooden or like insulating sleepers and respectively connected to the two poles of a battery or similar electrical source, and the axle of the leading pair of wheels of the oncoming train or locomotive.

The device according to the invention is essentially characterised by the use of the sudden variations of the electrical resistance of the said circuit as the said wheels ride over the rail joints for impressing rapid variations on an electromagnetic receiving or recording apparatus located at the observation station such as a level crossing on the track, the said apparatus comprising an electrical transformer, the primary winding of which has its respective terminals connected to the lines of rails through the battery or similar electrical source while its secondary winding is connected to an acoustical or luminous receiver or recorder. The acoustical or luminous receiver or recorder may comprise an amplifier.

For a better understanding of the invention reference will be made to the accompanying diagrammatic drawing.

It will be seen from the drawing that a circuit is formed by the two lines of rails AC and BD of the railway track situated in advance of the first wheel axle of a travelling train or locomotive, said axle, the source of electrical energy P such for example as a conventional battery, and an electro-magnetic receiving or recording apparatus comprising a transformer T and an acoustical or luminous receiver or recorder E. The primary winding of the transformer is connected to the two lines of rails AC and BD, and the secondary winding is connected to the acoustical or luminous receiver or recorder E. It will therefore be seen that, as the wheel axle AB approaches CD, the electrical resistance of the circuit will diminish, and as the rail joints constitute points in the track where the resistance of the circuit undergoes sudden variations, the apparatus E will register very rapid variations when the first wheel axle passes over said joints, which variations will be utilisable, assuming the length of the individual rails to be known, for providing the distant observer located opposite CD with information regarding the speed of the oncoming train or locomotive.

For example if the acoustical or luminous receiver or recorder E is constituted by a telephone receiver the secondary winding of the transformer T amplifies the variations of the current which pass through the primary winding and transmits them to the telephone receiver E by means of which the observer's ear can perceive the cracking noises that are produced by the passing of the wheel axle over the rail joints.

In the foregoing description, it is of course assumed that the rails are electrically insulated to a substantial extent by the usual wooden sleepers, the insulation being practically sufficient for ensuring proper operation of the device.

The railway track may, if required, be furnished with insulating joints adapted to limit the range of observation to a practically sufficient value or to insulate that section of the track in which it is desired to give warning of the approach of the train.

It will be seen that by means of the said device it is possible, without any line wires and at cheap cost, to provide, for example, level crossings or working places on the track with a very effective device for observing or ascertaining from a distance the approach and approximate speed of trains or locomotives.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A device for observing or ascertaining from a distance the approach and approximate speed of trains or locomotives on railways, of the type utilising an electrical circuit comprising the two lines of rails carried by wooden or like insulating sleepers and respectively connected to the two poles of a battery or similar electrical source, and the axle of the leading pair of wheels of the oncoming train or locomotive, characterised by the use of the sudden variations of the electrical resistance of the said circuit as the said wheels ride over the rail joints for impressing rapid variations on an electro magnetic receiving or recording apparatus located at the observation station such as a level crossing on the track, the said apparatus comprising an electrical transformer the primary winding of which has its respective terminals connected to the lines of rails through the battery or similar electrical source while its secondary winding is connected to an acoustical or luminous receiver or recorder.

2. A device according to claim 1, wherein the acoustical or luminous receiver or recorder comprises an amplifier.

3. A device for observing or ascertaining from a distance the approach and approximate speed of trains or locomotives on railways constructed, arranged and operating substantially as hereinbefore described and illustrated in the accompanying drawing.

Dated this 16th day of February, 1931.

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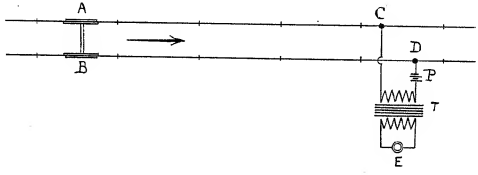
[This Drawing is a reproduction of the Original on a reduced scale.]



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